



Figure 41. Dissolved Lead (ICP-MS) Sample Concentrations by Date, Compared to WAC Chronic Standard

5. PROJECT OVERVIEW

This report summarizes water quality conditions and trends in Lake Washington using water quality data collected from 1990 through 2001 as part of the Major Lakes Monitoring Program. This dataset was analyzed to develop a current conditions benchmark of lake water quality trends in Lake Washington as a component of the Sammamish-Washington Analysis and Modeling Program (SWAMP). The purpose of SWAMP is to assist wastewater capital planning, habitat conservation, salmon recovery, and watershed planning efforts by collecting information and by developing and using a set of scientific tools to better understand the Sammamish-Washington Watershed system. This is the first of three reports to evaluate each of the three major lakes, Washington, Sammamish, and Union in the SWAMP study area.

This study describes and documents how Lake Washington has responded over this 10-year period to watershed activities, nutrient inputs, ecological interactions, and seasonal or year-to-year variability.

Specifically, water quality data were analyzed with the following objectives:

- To describe the current status of the lake's quality relative to ecological indicators, such as transparency (water clarity), dissolved oxygen (DO), total phosphorus (TP), and chlorophyll *a* (chl *a*).
- To describe the trends in water quality during the study period, with reference to historical conditions where applicable.
- To describe current similarities and differences in water quality between nearshore (littoral) and deep open water (pelagic) areas of the lake.
- To provide information for use in making future environmental management decisions.

6. SUMMARY OF FINDINGS

Data collected from 1990 through 2001 indicate that the quality of Lake Washington's water supports and is consistent with the lake's beneficial uses. Lake Washington water quality is indicative of mesotrophic, or moderately productive lake conditions, based upon the standard lake indices (i.e., nutrients, AHOD, chlorophyll-*a*, Secchi disk transparency).

6.1. Phosphorus and Nitrogen

Total phosphorus concentrations in Lake Washington are primarily a reflection of the large volume of water entering from the Cedar River and its relatively low P concentration. Essentially, the Cedar River is diluting the other sources of phosphorus entering the lake (e.g., Sammamish River, other tributaries, nearshore runoff). Without the high-quality Cedar River providing 50 percent of the inflow to the lake, the quality of Lake Washington would be many times poorer; given that 63 percent of the immediate watershed is urbanized and that the other inflows have a combined mean total phosphorus concentration roughly 3 times greater than the Cedar River.

Phosphorus trapped in the sediments in Lake Washington is not recycled through the water column. While the lake does strongly stratify, the period of stratification is not long enough nor the oxygen demand high enough for the oxygen concentrations in the hypolimnion to reach a state of anoxia given the current rate of depletion. The nine-year (1993 – 2001) areal hypolimnetic deficit rate (AHOD) was $473 \pm 89 \text{ mg/m}^2\text{-day}$, placing the lake somewhere between mesotrophic and eutrophic depending upon the standard used. The recent values are about half the high rate prior to wastewater diversion; AHOD in 1964 was $810 \text{ mg/m}^2\text{-day}$ (Welch and Perkins 1979b). Given the depth of the hypolimnion, either the rate of depletion would need to be greater or the period of stratification would need to be longer in order to reach anoxia. The minimum dissolved oxygen concentrations measured near the bottom from 1993 to 2001 did not drop below 2.5 mg/L.

There has been a statistically significant decreasing trend in whole lake volume weighted total phosphorus concentrations from 1993 to 2001. Annual mean concentrations for 1998 through 2001 were substantially lower than means observed in the previous six years. The lower whole-lake volume weighted TP in recent years is due in part to a statistically significant decline in hypolimnetic TP from 1992 to 2001. No trend is indicated for epilimnetic TP over the same period, although the epilimnion TP concentrations remain low enough to maintain relatively high water quality. The reason for the decrease in total phosphorus concentrations since 1998 has not been identified. However, a similar decrease in whole-lake total phosphorus has been noted in Lake Sammamish, and Lake Sawyer, two relatively large lakes in the County's monitoring program.

Like phosphorus, near shore total nitrogen (TN) concentrations were consistently higher than pelagic areas. Higher nitrate-nitrogen concentrations in the winter season were likely due to the influence of stormwater runoff. Prior to 2001, it appeared that total nitrogen concentrations were increasing over time in both the epilimnion and hypolimnion. However, the relatively low annual mean for 2001 counters any statistical significance.

Whole-lake TN to TP ratios ranged from 13:1 to 30:1, indicating that P was limiting algal growth. There was a trend toward increasing TN:TP ratios in the lake from 1994 through 2001, which indicates that Lake Washington has become increasingly limited by P. Most of the management options that have been implemented in the last decade were designed to reduce inputs of TP to the lake. The dramatic decrease in the N:P ratio that occurred in 2001 was due in part to a decrease in TN concentrations observed in 2001.

Nearshore volume-weighted mean TP and TN concentrations were statistically significant greater than the pelagic means. This would be expected given that most of the tributaries have higher nutrient concentrations than the ambient lake water. The larger volume in the pelagic portion of the lake, dominated by the Cedar River inflows, dilutes the effect of the higher nearshore concentrations beyond the immediate stream inflow area.

6.2. Chlorophyll-a

Chl *a* concentrations declined sharply from 1969 to 1970 in response to the decrease in phosphorus following waterwater diversion (Edmondson, 1970). Chl *a* declined again in 1976 when zooplankton grazing increased (Edmondson and Litt, 1982). The annual chl *a* 12-year mean was 3.4 µg/L with a summer 12-year mean of 2.4 µg/L. These concentrations indicate that the algal biomass remains low and the lake is mesotrophic.

Spring chl *a* concentrations were statistically significant higher than chl *a* concentrations for other seasons. Highest chl *a* concentrations occurred during spring with the usual bloom of diatoms, which were the most commonly occurring algae in Lake Washington. During this bloom, epilimnetic chl *a* concentrations peak on average at 10 µg/L, which is three times greater than during summer stratified conditions (G. Arhonditsis, et. al. 2003). Analysis conducted by Arhonditis suggests that the phytoplankton community strongly influences the seasonality of nutrients, dissolved oxygen, pH and water clarity.

Algal biomass as measured by chl *a* was consistently higher in the nearshore areas than the pelagic area, but the means were not significantly different. Algal biomass appears to be evenly distributed across the lake. Moreover, the significantly higher nearshore TP concentrations apparently did not result in a measurable increase in nearshore algae. The rate of exchange between the nearshore and pelagic waters was probably too great to allow a growth response to the higher nearshore TP.

While the 1994 through 2001 year-to-year variations in mean chl *a* concentrations did not relate strongly with TP, the long-term influence of TP on chl *a* and transparency becomes more convincing when the overall 10-year means are compared with model predictions

and historical data. The overall 10-year mean fits closely to the predicted concentration in spite of considerable variation among the individual yearly summer concentrations. Not notwithstanding year-to-year variations due largely to climatic conditions, algal biomass and transparency are strongly dependent on TP concentrations in Lake Washington over a wide range of external loading. Small differences in TP are not apt to explain small year-to-year variations in chl a.

6.3. Transparency

Transparency has remained consistent from year to year, with an overall mean of 4.6 meters (15 feet) indicative of mesotrophic conditions. Mean summer transparencies (June through September) ranged from 3.5 to 5.6 m (11.5 to 18.3 ft). Except for 1999, summer mean transparencies were greater in three of the last 4 years by an average of about 1 meter than the early part of the decade, though the difference was not statistically significant. Mean transparencies in the nearshore areas were slightly less, by 0.1 to 0.5 m, than those in the pelagic area. However, that difference was not statistically significant and would be expected given that nearshore areas are closer to inflows and are subject to bottom disturbance from wind and wave action and suspended solids inputs from land runoff.

Lake Washington appears to be in stable ecological condition with respect to water quality following the pre-sewer diversion period of over-enrichment. The lake is sensitive to P loading, and the maintenance of present day water quality is dependent on P loading remaining at or near current levels.

6.4. Temperature

From 1993 to 2001 there was an increasing trend in seasonal and annual average water temperatures (epilimnetic and whole lake) that may be attributed to global climate change-related increases in air temperatures. The effect of this trend on lake biota is currently unknown. Temperature of Lake Washington ranged from 7° to 9°C in January during the period of complete mixing every year. Similarly, the maximum temperature in both nearshore and pelagic water was between 21.5°C and 24.5°C. There was no significant increasing trend in maximum temperatures.

6.5. Future Directions

Lake Washington has some of the best water quality for a large lake entirely within a major metropolitan area, anywhere in the world. However recent history, where this lake was significantly culturally polluted, serves as a warning that future quality of Lake Washington is not assured without a substantial investment in time and effort. Federal listing of the chinook salmon runs in the Lake Washington watershed serves as a warning

that this ecosystem remains under stress. Without a continuing commitment, the substantial investment the citizens of this region have made in protecting water resources will be lost. How these impacts are dealt with now, will determine the future quality of Lake Washington.

King County has committed substantial resources to develop a suite of tools that will assist in protecting watershed functions by identifying and correcting activities in the watershed that degrade water quality and aquatic habitat. Development of an integrated suite of predictive models and an organized database of water quality and quantity data will provide the tools used to support water resources and to ensure Lake Washington remains world famous for environmental quality.

7. GLOSSARY

Adfluvial—Spending much of the life cycle in lakes but spawning and rearing in streams.

Algae—Single-celled, non-vascular plants containing chlorophyll, often forming colonies or filamentous chains. Algae form the base of the food chain in aquatic environments.

Algal bloom—Heavy growth of algae in and on a body of water as a result of high nutrient concentrations.

Alkalinity—The acid-combining capacity of a (carbonate) solution; its buffering capacity.

Anadromous—Migrating up rivers from the sea to breed in fresh water.

Anoxic—Lacking oxygen.

Anthropogenic—Caused by humans.

Areal hypolimnetic oxygen deficit rate (AHOD)—A measure of the oxygen depletion rate in the hypolimnion per sediment area per day.

Biomass—The total organic matter present.

Chlorophyll—The green pigments of plants. A measurement of chlorophyll *a*, one type of pigment, is commonly used as an indicator of the algae content of water.

Cyanobacteria—Formerly known as blue-green algae, actually bacteria that exhibit characteristics similar to those of algae and are considered part of the algal community.

Epilimnion—The turbulent superficial layer of a lake lying above the metalimnion.

Escapement—The number of fish that return to a specified measuring location after all natural mortality and harvest have occurred.

Eutrophic—Having a good supply of nutrients and hence rich organic production.

Hypolimnion—The deep layer of a lake lying below the metalimnion and removed from surface influences.

Limnetic zone—The open water region of a lake. This region supports plankton and fish as the principal plants and animals.

Limiting nutrient—The essential nutrient that is most scarce in the environment relative to the needs of the organism.

Littoral zone—The shoreward region of a water body.

Mean—The average of a set of values, calculated by dividing the sum of the values by the number of values.

Mesotrophic—Waters having a nutrient load resulting in moderate productivity.

Metalimnion—The layer of water in a lake between the epilimnion and hypolimnion in which the temperature exhibits the greatest difference in a vertical direction.

Monomictic—Having one mixing and one stratification event per year. If a lake does not freeze over in the winter, the winter winds will mix the waters of the lake. In summer, the lake resists mixing and becomes stratified because the surface waters are warm (light) and the bottom waters are cold (dense).

Nutrient—Any chemical element, ion, or compound required by an organism for the continuation of growth, reproduction, or other life processes.

Oligotrophic—Characterized by low concentrations of nutrients and algae and resulting in good water transparency.

Pelagic—Occurring in or related to the deep, open water area of a lake.

pH—A measure of the acidity of water on a scale of 0 to 14, with 7 representing neutral water. A pH less than 7 is considered acidic and above 7 is basic.

Phytoplankton—Free-floating microscopic plants (algae).

Productive type—The method of spawning and rearing that produced the fish, which constitutes the stock.

Production unit—Group of fish classified by their spawning location.

Profundal zone—The deep and bottom-water area beyond the depth of effective light penetration. All of the lake floor beneath the hypolimnion.

Secchi depth—A measure of transparency of water obtained by lowering a 10-cm black-and-white disk into water until the disk is no longer visible.

Standard deviation—A measure of the spread or dispersion of a set of data.

Stock origin—The genetic history of the fish stock.

Thermal stratification—The separation of the top and bottom water layers of a lake due to temperature and densities differences.

Thermocline—The depth in a stratified lake where the greatest change in temperature occurs. The thermocline separates the epilimnion from the hypolimnion.

Trophic state—Rating of the condition of a lake on the scale of oligotrophic-mesotrophic-eutrophic (see definition of these terms).

Water column—The area of water contained between the surface and the bottom of a waterbody.

8. REFERENCES

- Arhonditsis, G., M.T. Brett, and J. Frogge. 2002. Environmental control and limnological impacts of a large recurrent spring bloom in Lake Washington, USA. Unpublished Manuscript.
- Arhonditsis, G., M.T. Brett, J. Frogge. 2003. Environmental Management Vol. 31, No. 5, pp. 603-618.
- Beauchamp, D.A. 1987. Ecological relationships of hatchery rainbow trout in Lake Washington. Ph.D. Thesis, University of Washington, Seattle.
- Berge, H.B. and B.V. Mavros. 2001. King County bull trout program, 2000 bull trout surveys. King County Department of Natural Resources, Seattle.
- Blowers, P. 2002. Hardness and water quality. University of Arizona Department of Chemistry.
<http://www.che.arizona.edu/Directory/Faculty/Blowers/water/waterhardness1a.html>
- Bortleson, G.C. and D.A. Davis. 1997. Pesticides in Selected Small Streams in the Puget Sound Basin, 1987-1995. U.S. Geological Survey Fact Sheet 067-97, 4 pp.
- Carlson, R.E. 1977. A trophic state index for lakes. Limnol. Oceanogr. 22:361-8.
- Carlson, R.E. 2002. Kent State University, personal communication.
- Carroll and Pelletier. 1991. Diagnostic study of Lake Sawyer.
- Chrzastowki, M. 1983. Historical changes to Lake Washington and route of the Lake Washington ship canal, King County, Washington. Department of the Interior, United States Geological Survey, Water Resources, Open-file, Report 81-1182.
- Clesceri, L.S., A.E. Greenberg, and A.D. Eaton. 1999. Standard methods for the examination of water and wastewater. 20th Edition. American Public Health Association. Washington, D.C.
- Cooke, G.D., E.B. Welch, A.B. Martin, D.G. Fulmer, J.B. Hyde, and G.D. Schrieve. 1993. Effectiveness of Al, Ca, and Fe salts for control of internal phosphorus loading in shallow and deep lakes. Hydrobiologia 253:323-335.
- Coughlin, S. 2002. King County, Personal communication.
- Cullen, P. and C. Forsberg. 1988. Experiences with reducing point sources of phosphorus to lakes. Hydrobiologia 170:321-336.
- Downing et al. (2001) Predicting cyanobacteria dominance in lakes. Can. J. Fish. Aquat. Sci. 58:1905-1908.
- Droker, J. 2002. King County, personal communication.
- Edmondson, W.T., G.C. Anderson, and D.R. Peterson. 1956. Artificial eutrophication of Lake Washington. Limnol. Oceanogr. 26:1-28.

- Edmondson, W.T. 1966. Changes in the oxygen deficit of Lake Washington. Verh. Int. Verein. Limnol. 16:153-8.
- Edmondson, W.T. 1969. Eutrophication in North America. Pages 124-149 in Eutrophication: causes, consequences, correctives. National Academy of Sciences, Washington D.C.
- Edmondson, W.T. 1970. Phosphorus, nitrogen, and algae in Lake Washington after diversion of sewage. Science 169:690-1.
- Edmondson, W.T. 1978. Trophic equilibrium of Lake Washington. Ecol. Res. Ser., EPA-600/3-77-087, Cincinnati, Ohio. 36 pp.
- Edmondson, W.T. and J.R. Lehman. 1981. The effect of changes in the nutrient income on the condition of Lake Washington. Limnol Oceanogr. 26:1-28.
- Edmondson, W.T. and A.H. Litt. 1982. *Daphnia* in Lake Washington. Limnol. Oceanogr. 27:272-93.
- Edmondson, W.T. 1988. On the modest success of *Daphnia* in Lake Washington in 1965. Pages 223-243 in F.E. Round (ed). Algae in the aquatic environment: contributions in honour of J.W.G. Lund. C.B.E., F.R.S. Biopress, Bristol.
- Edmondson, W.T. 1991. The uses of Ecology: Lake Washington and Beyond. University Press.
- Edmondson, W.T. 1994. Sixty years of Lake Washington: a curriculum vitae. Lake and Reserv. Manage. 10(2):75-84.
- Foote, C.J., C.C. Wood, and R.E. Withler. 1989. Biochemical genetic comparison of sockeye salmon and kokanee, the anadromous and non-anadromous forms of *Oncorhynchus nerka*. Canadian Journal of Fisheries and Asiatic Sciences 46:149-159.
- Frodge, J.D., G.L. Thomas, and G.B. Pauley. 1990. Sediment phosphorus loading beneath dense canopies of aquatic macrophytes. Lake and Reserv. Manage. 7(1):61-71.
- Hutchinson, G.E. 1957. A treatise on limnology, Volume I. Wiley.
- Infante, A. and S.E.B. Abella. 1985. Inhibition of *Daphnia* by *Oscillatoria* in Lake Washington. Limnol. Oceanogr. 30:1046-52.
- Kerwin, J. 2001. Salmon and steelhead habitat limiting factors report for the Cedar-Sammamish Basin (Water Resource Inventory Area 8). Washington Conservation Commission. Olympia, Washington.
- King County Surface Water Management Division. 1996. Cottage Lake management plan: final plan. Prepared by KCM, Inc. Seattle, Washington.
- King County Wastewater Treatment Division. 2001. 2000/2001 Annual combined sewer overflow report. Department of Natural Resources. Seattle, Washington.
- King County Lake Monitoring Program. 2002. Available at:
<http://dnr.metrokc.gov/topics/Lakes/LKStopic.htm>
- King County Environmental Laboratory. 2002. Available at:
http://dnr.metrokc.gov/wlr/envlab/Dta_qual/dta_qual.htm

- Ludwa, K., G. Lucchetti, K.L. Fresh, and K. Walter. 1997. Assessing stream dwelling fishes in basins of the Lake Washington watershed, Summer 1996.
- MacCoy, D.E. and R.W. Black. 1998. Organic compounds and trace elements in freshwater streambed sediment and fish from the Puget Sound Basin. U.S. Geological Survey Fact Sheet 105-98.
- METRO (Municipality of Metropolitan Seattle). 1985. Water quality in nearshore Lake Washington: 1981-1984 baseline monitoring report. King County, Washington. Metro Water Quality Division, Technical Report WR-85-1.
- Moore, J.W. and S. Ramamoorthy. 1984a. Heavy metals in natural waters: Applied monitoring and impact assessment. Springer-Verlag. New York, New York.
- Moore, J.W. and S. Ramamoorthy. 1984b. Organic chemicals in natural waters: Applied monitoring and impact assessment. Springer-Verlag. New York, New York.
- Mortimer, C.H. 1941. The exchange of dissolved substances between mud and water in lakes (parts I and II). *J. Ecol.* 29:80-329.
- Murtaugh, P.A. 1981. Selective predation by *Neomysis mercedis* in Lake Washington. *Limnol. Oceanogr.* 26:445-453.
- Nowak, G.M. 2000. Movement patterns and feeding ecology of cutthroat trout (*Oncorhynchus clarki clarki*) in Lake Washington. M.S. Thesis. University of Washington, Seattle.
- Nurnberg, G.K. 1995. The anoxic factor, a quantitative measure of anoxia and fish species richness in central Ontario Lakes. *Trans. Am Fish. Soc.* 124:622-686.
- Nurnberg, G.K. 1996. Trophic state of clear and colored, soft-and hardwater lakes with special consideration of nutrients, anoxia, phytoplankton and fish. *Lake and Reserv. Manage.* 12(4):432-437.
- Richey, J.E. 1979. Patterns of phosphorus supply and utilization in Lake Washington and Findley Lake. *Limnology and Ocean*
- Sas, H. 1989. Lake restoration by reduction of nutrient loading: expectations, experiences, and extrapolations. Saint Augustine, Germany: Academia Verlag Richarz.
- Scott, J.B., C.R. Steward, and Q.J. Stober. 1986. Effects of urban development on fish population dynamics in Kelsey Creek, Washington. *Transactions of the American Fisheries Society* 115:555-567.
- Shapiro, J., W.T. Edmondson, and D.E. Allison. 1971. Changes in the chemical composition of sediments of Lake Washington, 1958-1970. *Limnol. Oceanogr.* 16:437-452.
- Smith, D.G. 2001. A protocol for standardizing Secchi disk measurements including use of a viewer box. *Lake and Reserv. Manage.* 17(2):90-96.
- Søndergaard, M., J.P. Jensen, and E. Jeppesen. 2001. Retention and internal loading of phosphorus in shallow, eutrophic Lakes. *Scientific World* 1:427-442.
- Welch, E.B. and M.A. Perkins. 1979a. Oxygen deficit rate as a trophic state index. *J. Water Pollut Control Fed.* 51:2823-28.

- Welch, E.B. and M.A. Perkins. 1979b. Oxygen deficit – phosphorus loading relation in lakes. *J. Water Poll. Cont. Fed.* 51:5093-5095.
- Welch, E.B. 1992. Ecological Effects of Wastewater: Applied Limnology and Pollutant Effects. 2nd Edition. E & FN Spon. New York, New York.
- Welch, E.B., G.D. Cooke, S.A. Peterson, and P.R. Newroth. 1993. Restoration and Management of Lakes and Reservoirs. 2nd Edition. Lewis. Boca Raton, FL.
- Welch, E.B., D.E. Spyaidakia, J.I. Shuster, and R.R. Horner. 1996. Decline lake sediment phosphorus release and oxygen deficit following wastewater diversion. *J. Water Poll. Cont. Fed.* 58:92-96.
- Welch, E.B. and J.M. Jacoby. 2001. On determining the principal source of phosphorus causing summer algal blooms in Western Washington Lakes. *Lake and Reserv. Manage.* 17(1):55-65.
- Wetzel, R.G. 1983. Limnology. 2nd Edition. Saunders College Publishing. New York, New York.
- Wood, C.C. 1995. Life history variation of population structure in sockeye salmon. Evolution and the Aquatic Ecosystem: Defining Unique Units in Population Conservation. American Fisheries Society Symposium 17: Bethesda, Maryland.
- Young, S.F., M.R. Downen, and J.B. Shaklee. 2001. A microsatellite DNA based characterization of Lake Washington/Lake Sammamish kokanee and sockeye salmon with notes on distribution, timing and morphology. Washington Department of Fish and Wildlife. Olympia, Washington.
- USEPA (United States Environmental Protection Agency). 1999. National Recommended Water Quality Criteria – Correction. U.S. Environmental Protection Agency, Office of Water. EPA 822-Z-99-001.
- USEPA (United States Environmental Protection Agency). 2002. Integrated risk information system (IRIS) database (www.epa.gov/iris). United States Environmental Protection Agency, Office of Research and Development.

Appendix A

Means and

Standard Deviations

of Water Quality Data

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Table A-1. Annual Mean Temperatures for Lake Washington, 1990-2001

Station		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	13.8	11.8	13.4	12.8	13.5	13.0	13.5	14.2	12.9	13.2	14.0	13.8
	S.D.	5.5	4.5	4.5	5.0	5.0	4.8	4.8	6.3	4.6	4.7	4.5	5.1
807	Mean	13.5	12.2	13.7	13.0	13.3	13.2	13.6	13.2	14.0	13.6	14.7	13.7
	S.D.	5.6	5.0	4.5	5.1	5.2	5.1	4.8	5.9	5.2	4.9	5.0	4.9
814	Mean	13.8	12.2	14.0	13.0	13.2	13.1	13.5	13.0	13.8	13.3	14.5	14.0
	S.D.	5.6	5.1	4.5	5.1	5.1	5.1	4.9	5.6	5.0	4.8	5.0	5.1
817	Mean	-	-	-	-	13.1	13.3	14.0	13.3	14.3	13.5	14.7	13.7
	S.D.	-	-	-	-	5.1	5.0	5.0	5.9	5.5	5.0	4.9	5.0
826	Mean	-	-	-	-	11.3	11.2	11.7	11.2	11.9	11.6	12.2	12.2
	S.D.	-	-	-	-	3.7	3.8	4.0	4.5	3.9	3.8	4.0	4.0
829	Mean	-	-	13.9	12.2	12.6	12.6	13.1	12.1	13.6	12.9	13.3	13.7
	S.D.	-	-	3.6	5.4	5.3	5.4	5.1	6.0	5.8	5.2	4.6	5.3
831	Mean	-	-	14.7	11.1	11.8	12.0	12.6	12.3	12.9	13.1	12.7	13.1
	S.D.	-	-	5.2	4.5	4.0	4.2	4.1	4.8	4.3	4.1	4.1	4.3
832	Mean	13.7	12.7	15.8	13.2	13.4	13.3	14.0	13.2	14.2	13.7	14.7	14.6
	S.D.	5.7	5.5	5.1	5.4	5.5	5.1	5.1	6.3	5.7	4.9	5.2	5.3
834	Mean	13.8	12.4	13.9	13.0	13.3	13.2	13.7	14.1	13.8	13.9	14.4	14.1
	S.D.	5.5	5.2	4.5	5.1	5.2	5.2	5.0	6.3	5.1	4.7	5.0	5.1
840	Mean	-	-	-	-	-	12.2	12.6	12.5	13.1	12.6	12.5	13.3
	S.D.	-	-	-	-	-	4.0	3.9	4.9	4.5	3.8	3.8	4.1
852	Mean	-	-	-	10.1	10.8	11.0	11.6	10.9	11.1	11.5	11.6	12.0
	S.D.	-	-	-	4.0	3.8	3.8	4.3	4.3	4.0	3.9	3.7	4.1
890	Mean	-	-	-	-	-	11.1	11.6	10.9	11.8	11.8	11.8	12.0
	S.D.	-	-	-	-	-	3.7	4.0	4.0	4.4	3.8	3.7	4.1
4903	Mean	-	-	-	-	-	-	16.5	16.9	14.4	15.1	13.5	14.1
	S.D.	-	-	-	-	-	-	5.5	5.0	6.6	5.7	5.8	5.6

Means +/- SD are arithmetic.

Table A-2. Annual Mean Secchi Depths for Lake Washington, 1990-2001

Station	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	2.7	2.6	3.0	3.0	3.3	3.2	3.0	2.5	3.5	2.9	3.9
	S.D.	0.7	1.4	1.0	1.2	1.2	1.0	1.1	1.2	1.2	0.9	1.4
807	Mean	3.3	3.3	3.6	3.5	3.6	3.4	2.8	2.9	3.9	3.1	4.1
	S.D.	0.8	1.0	0.9	1.0	1.7	0.8	0.9	1.1	1.2	1.0	1.2
814	Mean	3.8	3.6	4.1	4.4	4.2	3.9	3.5	3.5	4.3	3.7	4.5
	S.D.	1.2	0.9	1.2	1.5	1.2	1.2	1.2	0.9	1.1	0.9	1.3
817	Mean	-	-	-	-	3.8	3.9	3.5	3.2	4.2	3.5	4.3
	S.D.	-	-	-	-	1.3	1.0	1.2	0.9	1.1	0.8	1.3
826	Mean	-	-	-	-	4.5	4.2	3.9	3.7	5.0	3.9	4.7
	S.D.	-	-	-	-	1.3	1.2	1.1	0.9	1.1	0.8	1.3
829	Mean	-	-	4.6	4.2	3.8	3.9	3.4	3.5	4.7	3.7	4.4
	S.D.	-	-	0.8	1.4	1.3	1.2	1.1	1.4	1.1	1.1	1.0
831	Mean	-	-	4.6	5.0	4.4	4.0	3.3	3.7	4.6	3.8	4.8
	S.D.	-	-	1.1	2.0	1.1	1.4	1.0	1.0	1.1	1.1	1.4
832	Mean	3.2	2.8	3.9	3.4	3.7	2.9	2.7	3.1	4.0	3.3	4.3
	S.D.	1.4	1.1	1.0	1.0	1.1	1.0	1.2	1.1	1.2	1.0	1.2
834	Mean	3.8	3.6	4.2	4.4	4.3	3.8	3.4	3.6	4.5	3.9	4.6
	S.D.	1.5	1.0	1.2	1.4	1.3	1.0	1.2	1.1	1.0	1.1	1.3
840	Mean	-	-	-	-	-	3.5	3.3	3.5	4.4	3.6	4.4
	S.D.	-	-	-	-	-	1.0	1.2	0.9	1.3	0.8	1.4
852	Mean	-	-	-	5.0	4.3	4.7	4.0	4.0	5.0	3.9	4.7
	S.D.	-	-	-	1.9	1.5	1.3	1.4	0.9	0.9	0.7	1.2
890	Mean	-	-	-	-	-	4.3	3.7	4.0	5.1	3.9	4.8
	S.D.	-	-	-	-	-	0.9	1.3	0.9	1.1	0.8	1.3
4903	Mean	-	-	-	-	-	-	-	-	-	-	-
	S.D.	-	-	-	-	-	-	-	-	-	-	-

Means +/- SD are arithmetic.

Table A-3. Annual Dissolved Oxygen Means for Lake Washington, 1990-2001

Station	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	-	-	9.9	10.0	10.2	10.5	10.1	9.8	10.3	10.4	9.9
	S.D.	-	-	0.2	1.3	1.2	1.5	1.3	1.2	1.2	1.2	1.3
807	Mean	-	-	9.4	10.3	10.6	10.7	10.4	10.5	10.5	10.5	10.2
	S.D.	-	-	0.1	1.3	1.4	1.5	1.3	0.9	0.9	1.2	1.0
814	Mean	-	-	9.3	10.2	10.4	10.6	10.3	10.4	10.2	10.5	10.0
	S.D.	-	-	0.0	1.3	1.3	1.5	1.4	1.2	1.1	1.1	1.4
817	Mean	-	-	-	-	10.4	10.6	10.2	10.3	10.2	10.4	9.8
	S.D.	-	-	-	-	1.2	1.4	1.3	0.9	0.9	1.0	1.2
826	Mean	-	-	-	-	9.3	9.5	9.2	9.0	8.7	9.1	8.8
	S.D.	-	-	-	-	1.8	1.9	1.8	1.9	2.0	1.7	1.8
829	Mean	-	-	9.2	10.1	10.3	10.5	10.2	10.4	10.1	10.2	9.9
	S.D.	-	-	0.6	1.1	1.3	1.7	1.5	1.1	1.0	0.9	1.3
831	Mean	-	-	8.7	9.1	9.3	9.6	8.9	9.0	9.0	9.0	8.6
	S.D.	-	-	0.1	2.1	1.9	2.3	2.2	1.8	2.0	1.6	1.9
832	Mean	-	-	9.5	10.0	9.5	7.4	8.8	9.4	9.2	9.9	10.1
	S.D.	-	-	0.9	1.2	2.2	5.0	2.5	1.3	2.5	2.1	1.7
834	Mean	-	-	8.7	10.3	10.5	10.7	10.4	10.1	10.2	10.5	10.2
	S.D.	-	-	0.0	1.4	1.5	1.7	1.4	1.4	1.1	1.2	1.5
840	Mean	-	-	-	-	-	9.0	8.6	8.7	8.4	8.6	8.6
	S.D.	-	-	-	-	-	2.6	2.5	2.2	2.6	2.3	2.4
852	Mean	-	-	-	8.4	8.8	9.3	8.9	8.9	8.5	9.0	8.8
	S.D.	-	-	-	2.1	1.9	2.0	1.9	1.9	2.1	1.7	1.9
890	Mean	-	-	-	-	-	9.5	9.1	9.2	8.4	9.0	8.6
	S.D.	-	-	-	-	-	2.0	2.0	1.7	2.0	1.7	2.0
4903	Mean	-	-	-	-	-	11.0	10.4	11.0	10.9	10.8	10.8
	S.D.	-	-	-	-	-	1.5	1.3	0.7	0.9	1.1	1.2

Means +/- SD are arithmetic.

Table A-4. Volume-Weighted Hypolimnetic Dissolved Oxygen Means for Lake Washington, 1993-2001

YEAR	MEAN HYPOLIMENTIC DISSOLVED OXYGEN, mg/L	S.D.
1993	7.9	0.9
1994	8.8	1.6
1995	8.6	1.6
1996	8.9	1.5
1997	8.9	1.5
1998	8.8	2.3
1999	8.7	1.4
2000	8.9	2.3
2001	7.7	1.3

Means +/- SD are arithmetic.

Table A-5. Annual Conductivity Means for Lake Washington, 1992-2001

Station	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	-	-	102.5	104.8	107.2	108.4	103.1	97.0	103.1	104.7	102.3
	S.D.	-	-	0.7	4.4	5.6	13.7	6.7	6.4	8.0	9.8	7.8
807	Mean	-	-	99.5	100.5	103.9	104.5	99.3	92.2	98.7	101.4	97.9
	S.D.	-	-	0.7	3.0	3.4	13.6	4.6	3.8	5.1	9.6	5.0
814	Mean	-	-	100.0	99.7	103.3	103.3	97.8	89.4	97.2	99.2	96.5
	S.D.	-	-	0.0	2.7	3.5	12.8	4.6	3.0	5.2	9.4	5.0
817	Mean	-	-	-	-	106.6	108.7	101.1	91.5	100.2	102.1	98.6
	S.D.	-	-	-	-	4.0	17.9	6.3	3.4	5.6	8.7	5.7
826	Mean	-	-	-	-	102.7	103.1	96.5	88.8	96.4	99.6	93.9
	S.D.	-	-	-	-	3.7	12.7	4.2	3.2	3.4	7.6	4.8
829	Mean	-	-	95.7	91.8	96.6	94.7	93.2	80.5	90.4	91.4	88.6
	S.D.	-	-	2.0	7.1	6.3	13.3	5.8	8.8	8.6	12.2	7.2
831	Mean	-	-	96.8	96.1	100.2	97.6	94.6	84.9	93.7	96.2	92.2
	S.D.	-	-	2.3	3.8	3.4	8.6	4.5	4.7	5.0	8.6	4.8
832	Mean	-	-	101.5	99.8	101.2	101.6	101.7	85.5	97.3	98.8	95.9
	S.D.	-	-	4.9	2.7	5.5	14.0	9.2	8.8	8.8	10.2	6.9
834	Mean	-	-	98.7	98.4	101.9	101.5	96.2	87.2	95.4	97.3	94.1
	S.D.	-	-	0.6	3.4	3.4	12.8	6.2	3.6	5.2	10.1	5.0
840	Mean	-	-	-	-	-	98.7	95.2	85.7	94.6	97.4	92.0
	S.D.	-	-	-	-	-	9.8	4.6	4.1	4.3	8.5	5.1
852	Mean	-	-	-	99.2	102.3	104.8	95.8	88.0	95.0	98.3	93.9
	S.D.	-	-	-	4.8	4.1	15.7	4.5	2.7	3.6	8.1	4.4
890	Mean	-	-	-	-	-	99.7	95.3	87.5	94.9	98.0	93.6
	S.D.	-	-	-	-	-	7.2	3.5	3.0	3.7	7.6	4.2
4903	Mean	-	-	-	-	-	100.8	97.5	87.9	95.9	99.4	95.3
	S.D.	-	-	-	-	-	10.0	4.2	6.6	6.6	7.3	5.1
												5.5

Means +/- SD are arithmetic.

Table A-6. Annual Alkalinity Means for Lake Washington, 1990-2001

Station	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	39.0	39.5	37.9	38.1	41.4	40.4	39.1	36.7	38.2	36.7	37.2
	S.D.	2.9	3.9	1.8	7.3	2.5	1.4	3.0	1.9	2.2	2.2	1.4
807	Mean	36.8	36.3	37.0	38.5	39.9	39.3	37.2	36.1	37.3	35.9	36.2
	S.D.	1.9	2.1	1.4	1.9	1.6	0.7	1.2	0.8	1.5	1.5	1.2
814	Mean	-	-	-	-	40.2	39.5	36.2	35.2	37.0	35.4	36.0
	S.D.	-	-	-	-	1.5	0.9	1.5	1.1	1.6	1.7	1.2
817	Mean	-	-	-	-	40.3	39.9	37.5	35.7	38.1	36.0	37.6
	S.D.	-	-	-	-	1.6	0.8	0.9	1.3	1.8	1.7	1.0
826	Mean	-	-	-	-	38.8	38.0	35.5	34.6	36.2	34.7	35.6
	S.D.	-	-	-	-	1.3	1.1	1.7	1.1	1.4	1.6	1.1
829	Mean	-	-	39.0	36.4	37.9	36.5	34.8	31.3	34.7	33.8	34.1
	S.D.	-	-	0.0	3.5	2.9	3.2	2.0	3.4	3.5	2.5	1.7
831	Mean	-	-	35.4	35.6	39.3	37.3	34.7	33.2	34.9	33.7	34.4
	S.D.	-	-	2.2	0.7	1.8	1.5	1.6	2.1	2.3	2.0	1.6
832	Mean	36.3	35.5	36.7	38.3	40.3	40.5	39.2	34.4	37.2	35.4	38.3
	S.D.	1.7	2.4	3.1	1.7	2.1	1.3	2.5	3.3	2.2	1.5	2.8
834	Mean	35.5	35.5	37.4	36.8	39.1	38.4	35.9	34.2	36.3	34.7	35.6
	S.D.	1.7	2.6	3.7	1.8	1.6	1.0	1.7	1.7	2.0	1.8	1.4
840	Mean	-	-	-	-	-	37.8	35.2	33.2	35.6	33.7	34.7
	S.D.	-	-	-	-	-	1.3	2.3	1.8	2.1	1.9	1.5
852	Mean	-	-	-	37.0	38.5	38.0	35.2	34.4	35.9	34.9	35.4
	S.D.	-	-	-	1.3	1.4	1.1	1.5	0.9	1.4	1.2	1.0
890	Mean	-	-	-	-	-	37.6	34.6	34.0	35.3	34.4	35.0
	S.D.	-	-	-	-	-	0.9	1.4	1.5	1.4	1.4	1.1
4903	Mean	-	-	-	-	-	38.4	36.2	33.7	36.0	36.2	35.7
	S.D.	-	-	-	-	-	1.1	2.6	2.0	2.0	1.0	1.3

Means +/- SD are arithmetic.

Table A-7. Annual Total Phosphorus Means for Lake Washington, 1990-2001

Station	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	23	26	22	21	21	23	21	28	15	16	14
	+S.D.	9	20	13	23	7	14	15	15	11	6	8
	-S.D.	7	11	8	11	5	9	9	10	6	4	5
807	Mean	17	20	16	20	22	18	19	25	13	14	13
	+S.D.	4	7	7	21	19	12	12	13	9	7	6
	-S.D.	3	5	5	10	10	7	7	9	5	5	4
814	Mean	13	17	16	17	19	17	17	23	12	12	11
	+S.D.	10	8	10	21	9	13	10	24	6	5	9
	-S.D.	6	5	6	9	6	7	6	12	4	4	3
817	Mean	-	-	-	-	20	18	19	20	11	13	12
	+S.D.	-	-	-	-	13	16	19	11	5	5	6
	-S.D.	-	-	-	-	8	8	9	7	4	4	4
826	Mean	-	-	-	-	22	18	17	18	11	13	11
	+S.D.	-	-	-	-	16	13	13	10	8	8	7
	-S.D.	-	-	-	-	9	8	7	7	5	5	4
829	Mean	-	-	16	19	23	19	17	18	12	11	11
	+S.D.	-	-	11	18	16	20	12	12	7	5	6
	-S.D.	-	-	7	9	9	10	7	7	4	3	4
831	Mean	-	-	15	20	21	18	18	18	11	14	10
	+S.D.	-	-	10	14	13	15	12	9	6	9	5
	-S.D.	-	-	6	8	8	7	7	6	4	5	3
832	Mean	19	20	16	19	20	19	21	20	12	13	12
	+S.D.	10	10	9	12	12	11	15	10	7	4	5
	-S.D.	6	6	6	7	8	7	9	7	4	3	4
834	Mean	13	18	15	18	19	17	18	18	11	13	12
	+S.D.	13	6	9	23	17	11	13	8	6	6	5
	-S.D.	7	5	5	10	9	7	8	6	4	4	3
840	Mean	-	-	-	-	-	19	19	18	15	14	13
	+S.D.	-	-	-	-	-	13	13	9	8	6	6
	-S.D.	-	-	-	-	-	8	8	6	5	4	4
852	Mean	-	-	-	20	21	16	18	16	12	13	11
	+S.D.	-	-	-	24	17	15	14	12	10	8	8
	-S.D.	-	-	-	11	9	8	8	7	6	5	4
890	Mean	-	-	-	-	-	18	19	18	12	14	11
	+S.D.	-	-	-	-	-	15	12	11	9	7	6
	-S.D.	-	-	-	-	-	8	7	7	5	5	4
4903	Mean	-	-	-	-	-	21	21	22	12	13	13
	+S.D.	-	-	-	-	-	10	9	19	10	4	6
	-S.D.	-	-	-	-	-	7	6	10	6	3	4

Means +/- SD are based on log-normally distributed data.

Table A-8. Volume-Weighted Annual Whole-Lake and Nearshore Total Phosphorus Means for Lake Washington, 1990-2001

YEAR	Whole Lake Total Phosphorus Annual			Nearshore Total Phosphorus Annual		
	Mean (ug/L)	+S.D.	-S.D.	Mean (ug/L)	+S.D.	-S.D.
1990	-	-	-	20	5	4
1991	-	-	-	22	12	8
1992	14	20	9	20	10	7
1993	16	26	10	22	19	10
1994	18	25	13	24	13	9
1995	15	23	10	16	26	10
1996	16	21	13	21	11	7
1997	15	21	12	25	11	8
1998	12	17	9	14	8	5
1999	12	14	10	14	5	4
2000	10	13	8	13	6	4
2001	10	15	7	14	10	6

Means +/- SD are based on log-normally distributed data.

Table A-9. Volume-Weighted Whole-Lake Seasonal Total Phosphorus Means for Lake Washington, 1992-2001

YEAR	Winter Mean (ug/L)	+S.D.	-S.D.	Spring Mean (ug/L)	+S.D.	-S.D.	Summer Mean (ug/L)	+S.D.	-S.D.	Fall Mean (ug/L)	+S.D.	-S.D.
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	-
1992	16	3	3	10	6	4	14	12	7	15	4	3
1993	16	3	3	13	4	3	20	37	13	15	0	0
1994	18	8	5	17	14	8	19	6	4	17	2	2
1995	20	3	3	16	4	3	9	2	2	19	8	6
1996	20	1	1	15	3	3	15	5	4	15	7	5
1997	20	5	4	19	5	4	12	1	1	13	2	2
1998	14	1	1	10	1	1	10	2	1	15	10	6
1999	13	1	1	11	2	2	11	1	1	14	2	2
2000	12	1	1	10	3	2	8	1	1	11	3	3
2001	10	4	3	14	10	6	8	2	2	10	1	1

Means +/- SD are based on log-normally distributed data.

Table A-10. Volume-Weighted Nearshore Seasonal Total Phosphorus Means for Lake Washington, 1990-2001

YEAR	Winter Mean (ug/L)	+S.D.	-S.D.	Spring Mean (ug/L)	+S.D.	-S.D.	Summer Mean (ug/L)	+S.D.	-S.D.	Fall Mean (ug/L)	+S.D.	-S.D.
1990	23	6	5	19	6	4	19	5	4	17	4	3
1991	36	11	9	26	6	5	20	3	3	13	5	4
1992	29	13	9	19	8	6	16	10	6	20	9	6
1993	20	22	10	21	6	5	30	45	18	18	19	9
1994	33	31	16	20	5	4	29	12	8	18	4	3
1995	33	8	6	20	5	4	5	18	4	17	13	7
1996	31	12	9	26	13	9	17	6	4	15	4	3
1997	35	12	9	32	6	5	22	3	2	16	3	2
1998	26	6	5	11	5	3	12	3	2	11	4	3
1999	21	6	5	14	1	1	12	2	1	12	6	4
2000	20	3	3	14	3	2	9	2	2	12	5	4
2001	17	8	5	24	17	10	10	2	2	9	2	1

Means +/- SD are based on log-normally distributed data.

Table A-11. Annual Soluble Reactive Phosphorus Means for Lake Washington, 1990-2001

Station		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	8	7	8	8	7	6	7	14	5	6	5	3
	S.D.	3	4	4	5	6	6	5	7	5	4	4	1
807	Mean	8	7	6	6	6	6	5	11	5	5	4	3
	S.D.	4	4	2	3	5	6	4	6	4	4	4	1
814	Mean	7	6	6	6	5	6	6	9	5	5	4	2
	S.D.	4	2	2	4	5	6	5	5	5	4	4	1
817	Mean	-	-	-	-	6	6	7	10	5	6	4	3
	S.D.	-	-	-	-	5	6	6	5	5	4	4	1
826	Mean	-	-	-	-	9	8	9	10	7	7	6	4
	S.D.	-	-	-	-	8	7	8	5	7	6	6	4
829	Mean	-	-	7	7	5	6	7	9	5	5	4	3
	S.D.	-	-	3	4	4	5	5	5	4	3	4	1
831	Mean	-	-	8	8	7	7	7	8	5	6	4	3
	S.D.	-	-	6	6	5	6	6	5	4	3	3	2
832	Mean	7	7	6	6	5	5	6	9	4	5	4	2
	S.D.	3	4	2	4	4	6	4	6	4	4	4	1
834	Mean	7	6	6	6	5	5	6	10	5	5	4	3
	S.D.	4	2	2	4	5	5	6	4	4	4	4	1
840	Mean	-	-	-	-	0	6	8	9	5	6	5	4
	S.D.	-	-	-	-	0	5	6	5	4	4	4	3
852	Mean	-	-	-	9	10	9	11	10	9	9	7	5
	S.D.	-	-	-	8	17	8	9	7	8	7	7	5
890	Mean	-	-	-	-	-	9	10	10	8	9	6	5
	S.D.	-	-	-	-	-	7	7	6	7	5	5	5
4903	Mean	-	-	-	-	-	6	7	10	5	6	4	4
	S.D.	-	-	-	-	-	5	4	5	5	4	4	2

Means +/- SD are arithmetic.

Table A-12. Volume-Weighted Annual Whole-Lake and Nearshore Soluble Reactive Phosphorus Means for Lake Washington, 1990-2001

YEAR	Whole Lake Soluble Reactive Phosphorus Annual			Nearshore Soluble Reactive Phosphorus Annual		
	Mean (ug/L)	+S.D.	-S.D.	Mean (ug/L)	+S.D.	-S.D.
1990	-	-	-	7	4	4
1991	-	-	-	7	2	2
1992	6	3	3	7	4	4
1993	6	3	3	7	4	4
1994	7	3	3	6	5	4
1995	7	3	3	6	6	4
1996	7	2	2	7	4	4
1997	8	3	3	11	5	5
1998	6	3	3	4	5	2
1999	6	2	2	5	4	3
2000	5	2	2	5	4	3
2001	3	2	1	2	1	0

Means +/- SD are arithmetic.

Table A-13. Volume-Weighted Whole-Lake Soluble Reactive Phosphorus Seasonal Means for Lake Washington, 1992-2001

YEAR	Winter Mean (ug/L)	+S.D.	-S.D.	Spring Mean (ug/L)	+S.D.	-S.D.	Summer Mean (ug/L)	+S.D.	-S.D.	Fall Mean (ug/L)	+S.D.	-S.D.
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	-
1992	6	3	3	5	3	3	6	5	4	8	2	2
1993	8	3	3	3	1	1	5	1	1	9	1	1
1994	10	1	1	4	2	2	8	4	4	7	3	3
1995	10	2	2	4	1	1	6	1	1	8	2	2
1996	9	0	0	5	0	0	7	1	1	8	1	1
1997	12	1	1	7	4	4	5	1	1	7	1	1
1998	8	3	3	3	0	0	5	1	1	8	2	2
1999	8	0	0	5	1	1	5	1	1	8	1	1
2000	8	1	1	3	1	1	4	1	1	5	1	1
2001	2	2	0	1	1	0	4	2	2	6	1	1

Means +/- SD are arithmetic.

Table A-14. Annual Total Nitrogen Means for Lake Washington, 1993-2001

Station		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
804	Mean	-	-	-	356	360	413	430	467	363	465	409	318	
	S.D.	-	-	-	154	180	202	215	195	121	183	188	147	
807	Mean	-	-	-	294	329	321	350	390	318	387	340	269	
	S.D.	-	-	-	123	174	102	103	130	103	119	90	80	
814	Mean	-	-	-	245	288	290	349	363	293	365	327	279	
	S.D.	-	-	-	49	139	92	121	111	77	89	93	112	
817	Mean	-	-	-	-	329	359	400	380	340	383	348	273	
	S.D.	-	-	-	-	118	186	211	109	109	101	107	74	
826	Mean	-	-	-	-	337	346	378	393	346	408	379	285	
	S.D.	-	-	-	-	138	90	94	103	67	69	86	62	
829	Mean	-	-	-	286	310	304	330	366	279	362	321	274	
	S.D.	-	-	-	74	116	120	80	79	70	88	88	77	
831	Mean	-	-	-	301	322	316	352	391	320	393	346	282	
	S.D.	-	-	-	60	90	86	77	215	81	65	85	70	
832	Mean	-	-	-	271	297	321	351	345	356	357	332	270	
	S.D.	-	-	-	55	95	133	111	92	198	88	98	69	
834	Mean	-	-	-	243	336	292	326	336	278	347	314	261	
	S.D.	-	-	-	43	237	95	83	91	65	77	86	84	
840	Mean	-	-	-	-	-	323	364	358	336	402	368	291	
	S.D.	-	-	-	-	-	93	83	82	81	74	77	57	
852	Mean	-	-	-	-	334	338	369	380	346	408	374	291	
	S.D.	-	-	-	-	93	82	75	82	66	70	88	56	
890	Mean	-	-	-	-	-	332	372	372	345	412	373	293	
	S.D.	-	-	-	-	-	85	72	89	78	68	85	60	
4903	Mean	-	-	-	-	-	-	300	347	369	316	374	332	298
	S.D.	-	-	-	-	-	-	108	70	77	86	90	112	81

Means +/- SD are arithmetic.

Table A-15. Volume-Weighted Annual Whole-Lake and Nearshore Total Nitrogen Means for Lake Washington, 1993-2001

YEAR	Whole Lake Total Nitrogen Annual		Nearshore Total Nitrogen Annual	
	Mean (ug/L)	S.D.	Mean (ug/L)	S.D.
1990	-	-	-	-
1991	-	-	-	-
1992	-	-	-	-
1993	173	21	275	46
1994	252	37	304	100
1995	279	27	326	136
1996	302	20	372	120
1997	316	35	387	110
1998	290	33	322	86
1999	336	20	390	109
2000	320	45	357	105
2001	235	25	278	89

Means +/- SD are arithmetic.

Table A-16. Volume-Weighted Annual Whole-Lake Total Nitrogen Seasonal Means for Lake Washington, 1993-2001

YEAR	Winter Mean (ug/L)	S.D.	Spring Mean (ug/L)	S.D.	Summer Mean (ug/L)	S.D.	Fall Mean (ug/L)	S.D.
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-
1993	-	-	189	15	153	19	178	9
1994	223	40	273	58	260	15	253	23
1995	298	11	290	42	265	13	262	23
1996	304	17	319	27	299	10	287	16
1997	328	7	337	53	322	23	276	11
1998	258	17	297	10	292	16	311	55
1999	317	27	349	17	337	16	341	12
2000	325	16	311	28	308	28	334	94
2001	241	3	230	28	218	21	252	32

Means +/- SD are arithmetic.

Table A-17. Annual Ammonium Means for Lake Washington, 1990-2001

Station		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	15.7	16.7	19.4	15.2	20.0	22.2	26.4	33.8	20.6	15.7	14.4	13.0
	S.D.	8.7	8.8	8.8	11.9	0.0	6.0	7.7	12.2	5.9	9.7	4.9	5.0
807	Mean	12.7	12.9	13.5	12.3	20.0	20.4	24.0	28.6	16.3	10.7	12.3	10.2
	S.D.	5.6	3.2	4.3	7.6	0.0	1.8	5.7	12.1	5.0	2.0	3.9	0.7
814	Mean	12.8	11.1	11.9	11.1	20.0	20.0	25.8	26.1	16.3	11.5	11.6	10.6
	S.D.	5.9	1.9	3.0	6.3	0.0	0.0	7.3	5.6	4.7	5.6	3.2	1.6
817	Mean	-	-	-	-	21.7	20.6	26.5	27.5	18.7	14.7	12.0	11.3
	S.D.	-	-	-	-	8.9	2.6	10.1	8.7	10.3	8.6	2.8	1.3
826	Mean	-	-	-	-	21.0	22.1	26.6	27.7	16.0	12.6	13.0	12.1
	S.D.	-	-	-	-	5.4	11.0	10.0	11.1	5.5	7.4	6.0	3.2
829	Mean	-	-	13.3	12.3	20.1	22.1	24.1	27.7	15.6	12.2	12.1	10.5
	S.D.	-	-	5.7	5.7	0.4	8.0	4.8	8.1	4.7	3.4	4.4	1.1
831	Mean	-	-	15.6	11.4	20.6	20.3	24.2	31.2	15.8	14.0	12.1	11.4
	S.D.	-	-	10.4	4.7	3.3	1.3	5.8	32.3	4.7	6.4	3.8	5.2
832	Mean	11.6	10.9	12.5	13.7	20.0	20.0	23.6	27.1	16.2	11.3	12.4	11.0
	S.D.	4.4	1.8	4.9	10.6	0.0	0.0	6.0	6.2	4.7	2.1	6.5	2.6
834	Mean	12.9	11.5	12.9	10.8	20.2	21.0	25.0	28.4	18.0	10.8	12.5	10.8
	S.D.	7.1	2.5	6.1	4.6	1.1	3.9	7.4	7.6	12.1	2.0	4.0	2.7
840	Mean	-	-	-	-	-	20.4	26.1	31.9	17.5	12.8	14.3	12.7
	S.D.	-	-	-	-	-	1.8	13.2	9.8	8.0	6.8	10.8	5.7
852	Mean	-	-	-	7.8	26.0	20.2	24.2	24.4	14.4	11.5	12.1	11.3
	S.D.	-	-	-	2.5	28.8	1.3	6.7	6.3	5.2	4.1	5.2	3.5
890	Mean	-	-	-	-	-	20.6	23.8	26.5	15.1	11.9	12.4	11.1
	S.D.	-	-	-	-	-	3.2	7.5	9.0	5.1	4.3	5.8	3.8
4903	Mean	-	-	-	-	-	-	40.2	27.0	30.1	11.7	19.9	13.5
	S.D.	-	-	-	-	-	-	0.0	5.8	6.7	1.5	10.8	1.3
													2.1

Means +/- SD are arithmetic.

Table A-18. Volume-Weighted Annual Whole-Lake and Nearshore Ammonium Means for Lake Washington, 1990-2001

YEAR	Whole Lake Ammonium Annual		Nearshore Ammonium Annual	
	Mean (ug/L)	S.D.	Mean (ug/L)	S.D.
1990	-	-	13.2	4.5
1991	-	-	12.9	2.6
1992	11.4	5.3	17.8	6.9
1993	4.2	2.0	12.4	3.9
1994	18.7	11.8	20.2	0.7
1995	17.2	1.9	21.4	2.2
1996	19.6	4.3	25.0	4.6
1997	21.9	4.8	28.8	5.8
1998	13.1	2.9	17.6	4.7
1999	10.0	2.7	12.6	3.2
2000	10.0	2.9	12.6	3.6
2001	9.0	1.3	11.1	1.0

Means +/- SD are arithmetic.

Table A-19. Annual Nitrate-Nitrogen Means for Lake Washington, 1990-2001

Station	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	209	340	214	159	151	172	191	258	190	241	183
	S.D.	188	323	249	124	162	166	125	202	132	177	177
807	Mean	121	177	124	107	101	108	136	187	148	180	136
	S.D.	99	126	102	149	67	84	83	125	108	129	83
814	Mean	121	155	106	83	93	102	132	163	137	172	128
	S.D.	105	100	71	64	61	70	76	107	88	115	71
817	Mean	-	-	-	-	122	138	162	184	164	185	147
	S.D.	-	-	-	-	87	148	108	126	112	127	119
826	Mean	-	-	-	-	150	166	210	238	213	246	217
	S.D.	-	-	-	-	77	82	93	101	87	99	106
829	Mean	-	-	104	152	139	146	157	197	150	203	154
	S.D.	-	-	44	196	91	113	88	98	105	126	102
831	Mean	-	-	167	146	151	139	202	212	184	231	184
	S.D.	-	-	87	77	75	82	90	97	100	105	95
832	Mean	129	169	119	86	109	121	145	166	138	173	139
	S.D.	103	124	82	62	77	101	91	111	99	122	121
834	Mean	109	156	106	77	94	98	124	160	128	163	130
	S.D.	97	103	71	62	59	67	73	102	85	111	107
840	Mean	-	-	-	-	-	135	197	201	188	236	197
	S.D.	-	-	-	-	-	83	89	97	97	88	63
852	Mean	-	-	-	187	163	175	219	246	212	252	221
	S.D.	-	-	-	176	76	84	91	101	85	101	103
890	Mean	-	-	-	-	-	162	217	247	211	261	217
	S.D.	-	-	-	-	-	80	92	96	92	98	69
4903	Mean	-	-	-	-	-	-	-	-	-	-	-
	S.D.	-	-	-	-	-	-	-	-	-	-	-

Means +/- SD are arithmetic.

Table A-20. Volume-Weighted Annual Whole-Lake Nitrate-Nitrogen Seasonal Means for Lake Washington, 1992-2001

YEAR	Winter Mean (ug/L)	+S.D.	-S.D.	Spring Mean (ug/L)	+S.D.	-S.D.	Summer Mean (ug/L)	+S.D.	-S.D.	Fall Mean (ug/L)	+S.D.	-S.D.
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	-
1992	198	29	29	95	47	47	66	56	46	129	15	15
1993	243	173	173	86	17	17	107	16	16	144	22	22
1994	155	14	14	111	25	25	114	17	17	124	3	3
1995	161	7	7	132	17	17	136	5	5	137	24	24
1996	189	23	23	177	2	2	168	10	10	197	34	34
1997	232	15	15	206	52	52	179	15	15	181	7	7
1998	183	11	11	177	10	10	176	13	13	187	31	31
1999	214	23	23	226	30	30	198	20	20	211	21	21
2000	219	7	7	178	33	33	186	1	1	159	17	17
2001	131	3	3	102	5	5	114	13	13	138	17	17

Means +/- SD are arithmetic.

Table A-21. Volume-Weighted Annual Nearshore Nitrate-Nitrogen Seasonal Means for Lake Washington, 1990-2001

YEAR	Winter Mean (ug/L)	+S.D.	-S.D.	Spring Mean (ug/L)	+S.D.	-S.D.	Summer Mean (ug/L)	+S.D.	-S.D.	Fall Mean (ug/L)	+S.D.	-S.D.
1990	290	43	43	79	58	58	50	0	0	66	23	23
1991	378	96	96	178	115	115	63	23	23	94	55	55
1992	424	243	243	83	25	25	52	3	3	108	40	40
1993	204	9	9	99	29	29	36	18	16	61	78	41
1994	233	23	23	80	39	39	50	0	0	87	55	55
1995	301	81	81	69	31	31	51	2	2	113	96	93
1996	284	33	33	171	21	21	68	22	22	88	53	53
1997	351	61	61	234	109	109	59	15	15	139	75	75
1998	289	11	11	186	25	25	59	49	39	72	71	52
1999	349	47	47	235	73	73	54	47	34	142	122	122
2000	326	25	25	146	90	90	42	34	22	108	50	50
2001	192	5	5	99	56	56	20	1	0	117	117	97

Means +/- SD are arithmetic.

Table A-22. Annual Total Nitrogen-Total Phosphorus Ratio Means for Lake Washington, 1993-2001

Station		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	-	-	-	19	16	17	22	16	27	28	27	23
	S.D.	-	-	-	12	5	5	14	4	19	4	7	7
807	Mean	-	-	-	16	18	19	19	16	25	27	25	23
	S.D.	-	-	-	10	19	8	11	5	12	6	7	7
814	Mean	-	-	-	18	16	18	22	18	26	29	29	23
	S.D.	-	-	-	10	7	9	13	8	12	7	5	7
817	Mean	-	-	-	-	17	20	21	20	31	29	30	25
	S.D.	-	-	-	-	6	8	8	7	15	5	8	6
826	Mean	-	-	-	-	17	20	26	23	34	34	35	29
	S.D.	-	-	-	-	12	11	17	10	18	16	17	11
829	Mean	-	-	-	16	14	16	21	22	24	31	29	25
	S.D.	-	-	-	8	7	9	10	12	7	8	6	7
831	Mean	-	-	-	16	16	19	21	24	30	31	33	29
	S.D.	-	-	-	8	7	10	13	18	14	13	11	7
832	Mean	-	-	-	16	16	16	17	18	29	26	27	26
	S.D.	-	-	-	6	7	4	6	9	12	4	4	7
834	Mean	-	-	-	18	19	18	20	19	27	27	27	27
	S.D.	-	-	-	9	15	8	12	7	12	8	7	10
840	Mean	-	-	-	-	-	18	21	20	23	29	30	25
	S.D.	-	-	-	-	-	8	12	8	9	8	12	8
852	Mean	-	-	-	-	17	25	23	26	33	33	35	28
	S.D.	-	-	-	-	8	16	13	14	20	14	16	9
890	Mean	-	-	-	-	-	21	22	21	31	32	34	28
	S.D.	-	-	-	-	-	12	12	9	17	12	13	8
4903	Mean	-	-	-	-	-	-	-	-	-	-	-	-
	S.D.	-	-	-	-	-	-	-	-	-	-	-	-

Means +/- SD are arithmetic.

Table A-23. Volume-Weighted Annual Total Nitrogen-Total Phosphorus Whole-Lake and Epilimnion Means for Lake Washington, 1993-2001

YEAR	Whole Lake TN:TP Annual Mean	Epilimnion TN:TP Annual Mean
1990	-	-
1991	-	-
1992	-	-
1993	9	7
1994	13	13
1995	17	17
1996	18	19
1997	20	19
1998	23	27
1999	27	29
2000	30	34
2001	21	21

Means +/- SD are arithmetic.

Table A-24. Annual Chlorophyll a Means for Lake Washington, 1990-2001

Station	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
804	Mean	2.7	3.5	3.4	2.6	4.4	5.1	4.0	4.3	4.3	4.1	4.2
	+S.D.	2.9	3.2	2.9	4.2	14.3	7.3	4.9	4.6	2.9	4.1	7.0
	-S.D.	1.4	1.7	1.6	1.6	3.3	3.0	2.2	2.2	1.7	2.1	2.6
807	Mean	2.1	3.2	3.1	2.1	4.9	6.0	4.7	5.2	4.0	4.4	3.5
	+S.D.	5.9	2.4	3.4	10.7	7.5	8.2	5.9	5.5	2.8	4.5	3.9
	-S.D.	1.6	1.4	1.6	1.7	3.0	3.5	2.6	2.7	1.7	2.2	1.9
814	Mean	2.0	3.0	3.2	1.4	3.6	4.8	2.7	4.5	3.5	3.4	4.2
	+S.D.	11.2	3.4	4.6	10.9	6.4	7.9	13.4	4.5	2.1	3.9	4.5
	-S.D.	1.7	1.6	1.9	1.2	2.3	3.0	2.3	2.2	1.3	1.8	2.2
817	Mean	-	-	-	-	3.6	5.2	3.5	4.3	3.7	3.4	4.4
	+S.D.	-	-	-	-	11.3	8.8	4.6	4.0	3.8	3.5	5.4
	-S.D.	-	-	-	-	2.7	3.3	2.0	2.1	1.9	1.7	2.4
826	Mean	-	-	-	-	2.5	4.2	2.9	3.9	3.2	3.2	3.5
	+S.D.	-	-	-	-	8.3	7.3	4.1	4.2	2.7	3.7	4.7
	-S.D.	-	-	-	-	1.9	2.7	1.7	2.0	1.5	1.7	2.0
829	Mean	-	-	1.8	1.6	3.4	3.1	2.5	3.5	3.5	2.6	4.0
	+S.D.	-	-	1.6	5.1	6.4	4.1	3.0	3.4	1.7	2.5	3.6
	-S.D.	-	-	0.8	1.2	2.2	1.8	1.4	1.7	1.2	1.3	1.9
831	Mean	-	-	2.4	2.3	3.4	4.1	3.0	3.7	3.4	2.7	4.1
	+S.D.	-	-	1.1	1.8	1.9	2.4	1.6	1.9	1.5	1.4	2.2
	-S.D.	-	-	1.9	9.4	4.0	6.0	3.2	4.1	2.5	3.1	4.9
832	Mean	1.7	3.3	2.0	1.0	4.3	5.5	4.1	3.8	4.2	3.6	4.2
	+S.D.	8.2	4.0	9.0	13.8	5.4	8.1	4.6	3.0	3.4	3.8	3.5
	-S.D.	1.4	1.8	1.7	1.0	2.4	3.3	2.2	1.7	1.9	1.9	2.0
834	Mean	1.7	3.1	3.1	2.5	3.9	5.2	3.8	3.9	3.6	3.6	4.3
	+S.D.	10.0	3.2	3.5	6.2	6.3	7.8	4.9	4.1	2.8	3.5	3.7
	-S.D.	1.4	1.6	1.6	1.8	2.4	3.1	2.1	2.0	1.6	1.8	2.0
840	Mean	-	-	-	-	-	5.5	3.3	3.9	4.2	3.6	4.3
	+S.D.	-	-	-	-	-	10.1	3.1	4.1	3.4	3.5	4.2
	-S.D.	-	-	-	-	-	3.6	1.6	2.0	1.9	1.8	2.1
852	Mean	-	-	-	0.2	1.3	1.5	1.5	1.8	1.1	1.4	1.6
	+S.D.	-	-	-	2.1	4.3	5.1	3.3	4.9	2.7	2.7	4.1
	-S.D.	-	-	-	0.2	1.0	1.1	1.0	1.3	0.8	0.9	1.2
890	Mean	-	-	-	-	-	3.8	2.5	3.2	2.8	3.0	3.9
	+S.D.	-	-	-	-	-	5.1	2.6	4.3	3.1	3.5	5.6
	-S.D.	-	-	-	-	-	2.2	1.3	1.9	1.5	1.6	2.3
4903	Mean	-	-	-	-	-	-	4.4	3.0	3.5	3.5	2.9
	+S.D.	-	-	-	-	-	-	5.4	2.2	4.5	3.1	2.3
	-S.D.	-	-	-	-	-	-	2.4	1.3	2.0	1.6	1.3

Means +/- SD are arithmetic.

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0560	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0804	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0807	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0814	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0817	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0826	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0829	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0831	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0832	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0834	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0840	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0852	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0890	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
4903	1,1,1-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0560	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0804	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0807	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0814	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0817	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0826	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0829	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0831	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0832	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0834	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0840	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0852	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0890	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
4903	1,1,2,2-Tetrachloroethane	ug/L	0.5	-	0.5	0.5	1	0
0560	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0804	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0807	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0814	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0817	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0826	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0829	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0831	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0832	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0834	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0840	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0852	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0890	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
4903	1,1,2-Trichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0560	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0804	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0807	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water (continued)

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0814	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0817	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0826	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0829	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0831	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0832	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0834	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0840	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0852	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0890	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
4903	1,1,2-Trichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0560	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0804	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0807	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0814	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0817	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0826	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0829	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0831	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0832	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0834	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0840	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0852	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0890	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
4903	1,1-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0560	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0804	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0807	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0814	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0817	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0826	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0829	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0831	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0832	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0834	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0840	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0852	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0890	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
4903	1,1-Dichloroethylene	ug/L	0.5	-	0.5	0.5	1	0
0560	1,2,4-Trichlorobenzene	ug/L	0.29	-	0.29	0.29	1	0
0804	1,2,4-Trichlorobenzene	ug/L	0.285	-	0.285	0.285	1	0
0807	1,2,4-Trichlorobenzene	ug/L	0.022	0.075	0.0024	0.305	16	0
0814	1,2,4-Trichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0817	1,2,4-Trichlorobenzene	ug/L	0.021	0.070	0.0024	0.285	16	0
0826	1,2,4-Trichlorobenzene	ug/L	0.022	0.072	0.0024	0.29	16	0
0829	1,2,4-Trichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0831	1,2,4-Trichlorobenzene	ug/L	0.020	0.068	0.0024	0.285	17	0

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water (continued)

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0832	1,2,4-Trichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0834	1,2,4-Trichlorobenzene	ug/L	0.021	0.073	0.0024	0.305	17	0
0840	1,2,4-Trichlorobenzene	ug/L	0.022	0.072	0.0024	0.29	16	0
0852	1,2,4-Trichlorobenzene	ug/L	0.022	0.073	0.0024	0.285	15	0
0890	1,2,4-Trichlorobenzene	ug/L	0.022	0.074	0.0024	0.3	16	0
4903	1,2,4-Trichlorobenzene	ug/L	0.098	0.17	0.0024	0.29	3	0
0560	1,2-Dichlorobenzene	ug/L	0.29	-	0.29	0.29	1	0
0804	1,2-Dichlorobenzene	ug/L	0.285	-	0.285	0.285	1	0
0807	1,2-Dichlorobenzene	ug/L	0.033	0.073	0.01	0.305	16	0
0814	1,2-Dichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0817	1,2-Dichlorobenzene	ug/L	0.032	0.068	0.01	0.285	16	0
0826	1,2-Dichlorobenzene	ug/L	0.033	0.069	0.01	0.29	16	0
0829	1,2-Dichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0831	1,2-Dichlorobenzene	ug/L	0.032	0.065	0.01	0.285	17	0
0832	1,2-Dichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0834	1,2-Dichlorobenzene	ug/L	0.033	0.070	0.01	0.305	17	0
0840	1,2-Dichlorobenzene	ug/L	0.033	0.069	0.01	0.29	16	0
0852	1,2-Dichlorobenzene	ug/L	0.034	0.070	0.01	0.285	15	0
0890	1,2-Dichlorobenzene	ug/L	0.033	0.071	0.01	0.3	16	0
4903	1,2-Dichlorobenzene	ug/L	0.10	0.16	0.01	0.29	3	0
0560	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0804	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0807	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0814	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0817	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0826	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0829	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0831	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0832	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0834	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0840	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0852	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0890	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
4903	1,2-Dichloroethane	ug/L	0.5	-	0.5	0.5	1	0
0560	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0804	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0807	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0814	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0817	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0826	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0829	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0831	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0832	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0834	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0840	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0852	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water (continued)

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0890	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
4903	1,2-Dichloropropane	ug/L	0.5	-	0.5	0.5	1	0
0560	1,2-Diphenylhydrazine	ug/L	0.95	-	0.95	0.95	1	0
0804	1,2-Diphenylhydrazine	ug/L	0.95	-	0.95	0.95	1	0
0807	1,2-Diphenylhydrazine	ug/L	1	-	1	1	1	0
0814	1,2-Diphenylhydrazine	ug/L	1	-	1	1	1	0
0817	1,2-Diphenylhydrazine	ug/L	0.95	-	0.95	0.95	1	0
0826	1,2-Diphenylhydrazine	ug/L	0.95	-	0.95	0.95	1	0
0829	1,2-Diphenylhydrazine	ug/L	1	-	1	1	1	0
0831	1,2-Diphenylhydrazine	ug/L	0.95	-	0.95	0.95	1	0
0832	1,2-Diphenylhydrazine	ug/L	1	-	1	1	1	0
0834	1,2-Diphenylhydrazine	ug/L	1	-	1	1	1	0
0840	1,2-Diphenylhydrazine	ug/L	0.95	-	0.95	0.95	1	0
0852	1,2-Diphenylhydrazine	ug/L	0.95	-	0.95	0.95	1	0
0890	1,2-Diphenylhydrazine	ug/L	1	-	1	1	1	0
4903	1,2-Diphenylhydrazine	ug/L	0.95	-	0.95	0.95	1	0
0560	1,3-Dichlorobenzene	ug/L	0.29	-	0.29	0.29	1	0
0804	1,3-Dichlorobenzene	ug/L	0.285	-	0.285	0.285	1	0
0807	1,3-Dichlorobenzene	ug/L	0.033	0.073	0.01	0.305	16	0
0814	1,3-Dichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0817	1,3-Dichlorobenzene	ug/L	0.032	0.068	0.01	0.285	16	0
0826	1,3-Dichlorobenzene	ug/L	0.033	0.069	0.01	0.29	16	0
0829	1,3-Dichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0831	1,3-Dichlorobenzene	ug/L	0.032	0.065	0.01	0.285	17	0
0832	1,3-Dichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0834	1,3-Dichlorobenzene	ug/L	0.033	0.070	0.01	0.305	17	0
0840	1,3-Dichlorobenzene	ug/L	0.033	0.069	0.01	0.29	16	0
0852	1,3-Dichlorobenzene	ug/L	0.034	0.070	0.01	0.285	15	0
0890	1,3-Dichlorobenzene	ug/L	0.033	0.071	0.01	0.3	16	0
4903	1,3-Dichlorobenzene	ug/L	0.10	0.16	0.01	0.29	3	0
0560	1,4-Dichlorobenzene	ug/L	0.29	-	0.29	0.29	1	0
0804	1,4-Dichlorobenzene	ug/L	0.285	-	0.285	0.285	1	0
0807	1,4-Dichlorobenzene	ug/L	0.033	0.073	0.01	0.305	16	0
0814	1,4-Dichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0817	1,4-Dichlorobenzene	ug/L	0.032	0.068	0.01	0.285	16	0
0826	1,4-Dichlorobenzene	ug/L	0.033	0.069	0.01	0.29	16	0
0829	1,4-Dichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0831	1,4-Dichlorobenzene	ug/L	0.032	0.065	0.01	0.285	17	0
0832	1,4-Dichlorobenzene	ug/L	0.3	-	0.3	0.3	1	0
0834	1,4-Dichlorobenzene	ug/L	0.033	0.070	0.01	0.305	17	0
0840	1,4-Dichlorobenzene	ug/L	0.033	0.069	0.01	0.29	16	0
0852	1,4-Dichlorobenzene	ug/L	0.034	0.070	0.01	0.285	15	0
0890	1,4-Dichlorobenzene	ug/L	0.033	0.071	0.01	0.3	16	0
4903	1,4-Dichlorobenzene	ug/L	0.10	0.16	0.01	0.29	3	0
0560	2,4,5-T	ug/L	0.135	-	0.135	0.135	1	0
0804	2,4,5-T	ug/L	0.125	-	0.125	0.125	1	0
0807	2,4,5-T	ug/L	0.038	0.026	0.025	0.13	16	0

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water (continued)

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0814	2,4,5-T	ug/L	0.13	-	0.13	0.13	1	0
0817	2,4,5-T	ug/L	0.038	0.026	0.025	0.13	16	0
0826	2,4,5-T	ug/L	0.037	0.025	0.025	0.125	16	0
0829	2,4,5-T	ug/L	0.125	-	0.125	0.125	1	0
0831	2,4,5-T	ug/L	0.037	0.025	0.025	0.13	17	0
0832	2,4,5-T	ug/L	0.13	-	0.13	0.13	1	0
0834	2,4,5-T	ug/L	0.037	0.024	0.025	0.125	17	0
0840	2,4,5-T	ug/L	0.037	0.026	0.025	0.13	16	0
0852	2,4,5-T	ug/L	0.038	0.025	0.025	0.125	15	0
0890	2,4,5-T	ug/L	0.036	0.026	0.0035	0.125	16	0
4903	2,4,5-T	ug/L	0.068	0.049	0.04	0.125	3	0
0560	2,4,5-TP (Silvex)	ug/L	0.165	-	0.165	0.165	1	0
0804	2,4,5-TP (Silvex)	ug/L	0.155	-	0.155	0.155	1	0
0807	2,4,5-TP (Silvex)	ug/L	0.046	0.043	0.01	0.16	16	0
0814	2,4,5-TP (Silvex)	ug/L	0.155	-	0.155	0.155	1	0
0817	2,4,5-TP (Silvex)	ug/L	0.045	0.042	0.01	0.155	16	0
0826	2,4,5-TP (Silvex)	ug/L	0.042	0.042	0.01	0.155	16	0
0829	2,4,5-TP (Silvex)	ug/L	0.155	-	0.155	0.155	1	0
0831	2,4,5-TP (Silvex)	ug/L	0.043	0.041	0.01	0.155	17	0
0832	2,4,5-TP (Silvex)	ug/L	0.16	-	0.16	0.16	1	0
0834	2,4,5-TP (Silvex)	ug/L	0.043	0.041	0.01	0.155	17	0
0840	2,4,5-TP (Silvex)	ug/L	0.042	0.043	0.01	0.16	16	0
0852	2,4,5-TP (Silvex)	ug/L	0.044	0.043	0.01	0.155	15	0
0890	2,4,5-TP (Silvex)	ug/L	0.045	0.042	0.0014	0.155	16	0
4903	2,4,5-TP (Silvex)	ug/L	0.098	0.049	0.07	0.155	3	0
0560	2,4,5-Trichlorophenol	ug/L	1.95	-	1.95	1.95	1	0
0804	2,4,5-Trichlorophenol	ug/L	1.9	-	1.9	1.9	1	0
0807	2,4,5-Trichlorophenol	ug/L	0.17	0.50	0.025	2.05	16	0
0814	2,4,5-Trichlorophenol	ug/L	2	-	2	2	1	0
0817	2,4,5-Trichlorophenol	ug/L	0.16	0.46	0.025	1.9	16	0
0826	2,4,5-Trichlorophenol	ug/L	0.17	0.48	0.025	1.95	16	0
0829	2,4,5-Trichlorophenol	ug/L	2	-	2	2	1	0
0831	2,4,5-Trichlorophenol	ug/L	0.16	0.45	0.025	1.9	17	0
0832	2,4,5-Trichlorophenol	ug/L	2	-	2	2	1	0
0834	2,4,5-Trichlorophenol	ug/L	0.16	0.49	0.025	2.05	17	0
0840	2,4,5-Trichlorophenol	ug/L	0.17	0.48	0.03	1.95	16	0
0852	2,4,5-Trichlorophenol	ug/L	0.17	0.48	0.025	1.9	15	0
0890	2,4,5-Trichlorophenol	ug/L	0.17	0.49	0.025	2	16	0
4903	2,4,5-Trichlorophenol	ug/L	0.67	1.1	0.025	1.95	3	0
0560	2,4,6-Trichlorophenol	ug/L	1.95	-	1.95	1.95	1	0
0804	2,4,6-Trichlorophenol	ug/L	1.9	-	1.9	1.9	1	0
0807	2,4,6-Trichlorophenol	ug/L	0.14	0.51	0.01	2.05	16	0
0814	2,4,6-Trichlorophenol	ug/L	2	-	2	2	1	0
0817	2,4,6-Trichlorophenol	ug/L	0.13	0.47	0.01	1.9	16	0
0826	2,4,6-Trichlorophenol	ug/L	0.14	0.48	0.01	1.95	16	0
0829	2,4,6-Trichlorophenol	ug/L	2	-	2	2	1	0

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water (continued)

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0831	2,4,6-Trichlorophenol	ug/L	0.13	0.46	0.01	1.9	17	0
0832	2,4,6-Trichlorophenol	ug/L	2	-	2	2	1	0
0834	2,4,6-Trichlorophenol	ug/L	0.14	0.49	0.01	2.05	17	0
0840	2,4,6-Trichlorophenol	ug/L	0.14	0.48	0.01	1.95	16	0
0852	2,4,6-Trichlorophenol	ug/L	0.14	0.49	0.01	1.9	15	0
0890	2,4,6-Trichlorophenol	ug/L	0.14	0.50	0.01	2	16	0
4903	2,4,6-Trichlorophenol	ug/L	0.66	1.1	0.01	1.95	3	0
0560	2,4-D	ug/L	0.105	-	0.105	0.105	1	0
0804	2,4-D	ug/L	0.1	-	0.1	0.1	1	0
0807	2,4-D	ug/L	0.032	0.023	0.015	0.105	16	0
0814	2,4-D	ug/L	0.1	-	0.1	0.1	1	0
0817	2,4-D	ug/L	0.035	0.025	0.015	0.1	16	1
0826	2,4-D	ug/L	0.030	0.022	0.015	0.1	16	0
0829	2,4-D	ug/L	0.1	-	0.1	0.1	1	0
0831	2,4-D	ug/L	0.030	0.022	0.015	0.1	17	0
0832	2,4-D	ug/L	0.105	-	0.105	0.105	1	0
0834	2,4-D	ug/L	0.030	0.022	0.015	0.1	17	0
0840	2,4-D	ug/L	0.037	0.033	0.015	0.13	16	1
0852	2,4-D	ug/L	0.031	0.023	0.015	0.1	15	0
0890	2,4-D	ug/L	0.030	0.023	0.0018	0.1	16	0
4903	2,4-D	ug/L	0.060	0.035	0.04	0.1	3	0
0560	2,4-DB	ug/L	0.145	-	0.145	0.145	1	0
0804	2,4-DB	ug/L	0.135	-	0.135	0.135	1	0
0807	2,4-DB	ug/L	0.045	0.029	0.025	0.14	16	0
0814	2,4-DB	ug/L	0.14	-	0.14	0.14	1	0
0817	2,4-DB	ug/L	0.045	0.029	0.025	0.14	16	0
0826	2,4-DB	ug/L	0.043	0.029	0.025	0.135	16	0
0829	2,4-DB	ug/L	0.135	-	0.135	0.135	1	0
0831	2,4-DB	ug/L	0.044	0.029	0.025	0.14	17	0
0832	2,4-DB	ug/L	0.14	-	0.14	0.14	1	0
0834	2,4-DB	ug/L	0.044	0.028	0.025	0.135	17	0
0840	2,4-DB	ug/L	0.043	0.030	0.025	0.14	16	0
0852	2,4-DB	ug/L	0.044	0.029	0.025	0.135	15	0
0890	2,4-DB	ug/L	0.044	0.030	0.0035	0.135	16	0
4903	2,4-DB	ug/L	0.082	0.046	0.055	0.135	3	0
0560	2,4-Dichlorophenol	ug/L	0.485	-	0.485	0.485	1	0
0804	2,4-Dichlorophenol	ug/L	0.475	-	0.475	0.475	1	0
0807	2,4-Dichlorophenol	ug/L	0.063	0.12	0.02	0.5	16	0
0814	2,4-Dichlorophenol	ug/L	0.5	-	0.5	0.5	1	0
0817	2,4-Dichlorophenol	ug/L	0.061	0.11	0.02	0.475	16	0
0826	2,4-Dichlorophenol	ug/L	0.063	0.11	0.02	0.485	16	0
0829	2,4-Dichlorophenol	ug/L	0.5	-	0.5	0.5	1	0
0831	2,4-Dichlorophenol	ug/L	0.060	0.11	0.02	0.475	17	0
0832	2,4-Dichlorophenol	ug/L	0.5	-	0.5	0.5	1	0
0834	2,4-Dichlorophenol	ug/L	0.061	0.11	0.02	0.5	17	0
0840	2,4-Dichlorophenol	ug/L	0.063	0.11	0.02	0.485	16	0
0852	2,4-Dichlorophenol	ug/L	0.064	0.11	0.02	0.475	15	0

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water (continued)

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0890	2,4-Dichlorophenol	ug/L	0.063	0.12	0.02	0.5	16	0
4903	2,4-Dichlorophenol	ug/L	0.18	0.27	0.02	0.485	3	0
0560	2,4-Dimethylphenol	ug/L	0.485	-	0.485	0.485	1	0
0804	2,4-Dimethylphenol	ug/L	0.475	-	0.475	0.475	1	0
0807	2,4-Dimethylphenol	ug/L	0.54	0.18	0.355	0.75	16	0
0814	2,4-Dimethylphenol	ug/L	0.5	-	0.5	0.5	1	0
0817	2,4-Dimethylphenol	ug/L	0.54	0.18	0.355	0.75	16	0
0826	2,4-Dimethylphenol	ug/L	0.56	0.17	0.355	0.75	16	0
0829	2,4-Dimethylphenol	ug/L	0.5	-	0.5	0.5	1	0
0831	2,4-Dimethylphenol	ug/L	0.55	0.18	0.355	0.75	17	0
0832	2,4-Dimethylphenol	ug/L	0.5	-	0.5	0.5	1	0
0834	2,4-Dimethylphenol	ug/L	0.55	0.17	0.355	0.75	17	0
0840	2,4-Dimethylphenol	ug/L	0.56	0.17	0.355	0.75	16	0
0852	2,4-Dimethylphenol	ug/L	0.55	0.17	0.355	0.7	15	0
0890	2,4-Dimethylphenol	ug/L	0.54	0.18	0.355	0.75	16	0
4903	2,4-Dimethylphenol	ug/L	0.40	0.071	0.355	0.485	3	0
0560	2,4-Dinitrophenol	ug/L	0.95	-	0.95	0.95	1	0
0804	2,4-Dinitrophenol	ug/L	0.95	-	0.95	0.95	1	0
0807	2,4-Dinitrophenol	ug/L	0.40	0.20	0.235	1	16	0
0814	2,4-Dinitrophenol	ug/L	1	-	1	1	1	0
0817	2,4-Dinitrophenol	ug/L	0.40	0.19	0.235	0.95	16	0
0826	2,4-Dinitrophenol	ug/L	0.42	0.18	0.235	0.95	16	0
0829	2,4-Dinitrophenol	ug/L	1	-	1	1	1	0
0831	2,4-Dinitrophenol	ug/L	0.41	0.18	0.235	0.95	17	0
0832	2,4-Dinitrophenol	ug/L	1	-	1	1	1	0
0834	2,4-Dinitrophenol	ug/L	0.41	0.19	0.235	1	17	0
0840	2,4-Dinitrophenol	ug/L	0.42	0.18	0.24	0.95	16	0
0852	2,4-Dinitrophenol	ug/L	0.41	0.19	0.235	0.95	15	0
0890	2,4-Dinitrophenol	ug/L	0.40	0.20	0.235	1	16	0
4903	2,4-Dinitrophenol	ug/L	0.48	0.41	0.235	0.95	3	0
0560	2,4-Dinitrotoluene	ug/L	0.195	-	0.195	0.195	1	0
0804	2,4-Dinitrotoluene	ug/L	0.19	-	0.19	0.19	1	0
0807	2,4-Dinitrotoluene	ug/L	0.027	0.048	0.01	0.205	16	0
0814	2,4-Dinitrotoluene	ug/L	0.2	-	0.2	0.2	1	0
0817	2,4-Dinitrotoluene	ug/L	0.026	0.044	0.01	0.19	16	0
0826	2,4-Dinitrotoluene	ug/L	0.027	0.045	0.01	0.195	16	0
0829	2,4-Dinitrotoluene	ug/L	0.2	-	0.2	0.2	1	0
0831	2,4-Dinitrotoluene	ug/L	0.026	0.043	0.01	0.19	17	0
0832	2,4-Dinitrotoluene	ug/L	0.2	-	0.2	0.2	1	0
0834	2,4-Dinitrotoluene	ug/L	0.027	0.046	0.01	0.205	17	0
0840	2,4-Dinitrotoluene	ug/L	0.028	0.045	0.01	0.195	16	0
0852	2,4-Dinitrotoluene	ug/L	0.027	0.045	0.01	0.19	15	0
0890	2,4-Dinitrotoluene	ug/L	0.027	0.046	0.01	0.2	16	0
4903	2,4-Dinitrotoluene	ug/L	0.072	0.11	0.01	0.195	3	0
0560	2,6-Dinitrotoluene	ug/L	0.195	-	0.195	0.195	1	0
0804	2,6-Dinitrotoluene	ug/L	0.19	-	0.19	0.19	1	0

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water (continued)

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0807	2,6-Dinitrotoluene	ug/L	0.027	0.048	0.01	0.205	16	0
0814	2,6-Dinitrotoluene	ug/L	0.2	-	0.2	0.2	1	0
0817	2,6-Dinitrotoluene	ug/L	0.026	0.044	0.01	0.19	16	0
0826	2,6-Dinitrotoluene	ug/L	0.027	0.045	0.01	0.195	16	0
0829	2,6-Dinitrotoluene	ug/L	0.2	-	0.2	0.2	1	0
0831	2,6-Dinitrotoluene	ug/L	0.026	0.043	0.01	0.19	17	0
0832	2,6-Dinitrotoluene	ug/L	0.2	-	0.2	0.2	1	0
0834	2,6-Dinitrotoluene	ug/L	0.027	0.046	0.01	0.205	17	0
0840	2,6-Dinitrotoluene	ug/L	0.028	0.045	0.01	0.195	16	0
0852	2,6-Dinitrotoluene	ug/L	0.027	0.045	0.01	0.19	15	0
0890	2,6-Dinitrotoluene	ug/L	0.027	0.046	0.01	0.2	16	0
4903	2,6-Dinitrotoluene	ug/L	0.072	0.11	0.01	0.195	3	0
0560	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0804	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0807	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0814	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0817	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0826	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0829	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0831	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0832	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0834	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0840	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0852	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0890	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
4903	2-Butanone (MEK)	ug/L	2.5	-	2.5	2.5	1	0
0560	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0804	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0807	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0814	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0817	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0826	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0829	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0831	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0832	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0834	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0840	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0852	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0890	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
4903	2-Chloroethylvinyl ether	ug/L	0.5	-	0.5	0.5	1	0
0560	2-Chloronaphthalene	ug/L	0.29	-	0.29	0.29	1	0
0804	2-Chloronaphthalene	ug/L	0.285	-	0.285	0.285	1	0
0807	2-Chloronaphthalene	ug/L	0.022	0.075	0.0024	0.305	16	0
0814	2-Chloronaphthalene	ug/L	0.3	-	0.3	0.3	1	0
0817	2-Chloronaphthalene	ug/L	0.021	0.070	0.0024	0.285	16	0
0826	2-Chloronaphthalene	ug/L	0.022	0.072	0.0024	0.29	16	0
0829	2-Chloronaphthalene	ug/L	0.3	-	0.3	0.3	1	0

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water (continued)

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0831	2-Chloronaphthalene	ug/L	0.020	0.068	0.0024	0.285	17	0
0832	2-Chloronaphthalene	ug/L	0.3	-	0.3	0.3	1	0
0834	2-Chloronaphthalene	ug/L	0.021	0.073	0.0024	0.305	17	0
0840	2-Chloronaphthalene	ug/L	0.022	0.072	0.0024	0.29	16	0
0852	2-Chloronaphthalene	ug/L	0.022	0.073	0.0024	0.285	15	0
0890	2-Chloronaphthalene	ug/L	0.022	0.074	0.0024	0.3	16	0
4903	2-Chloronaphthalene	ug/L	0.098	0.17	0.0024	0.29	3	0
0560	2-Chlorophenol	ug/L	0.95	-	0.95	0.95	1	0
0804	2-Chlorophenol	ug/L	0.95	-	0.95	0.95	1	0
0807	2-Chlorophenol	ug/L	0.094	0.24	0.02	1	16	0
0814	2-Chlorophenol	ug/L	1	-	1	1	1	0
0817	2-Chlorophenol	ug/L	0.091	0.23	0.02	0.95	16	0
0826	2-Chlorophenol	ug/L	0.092	0.23	0.02	0.95	16	0
0829	2-Chlorophenol	ug/L	1	-	1	1	1	0
0831	2-Chlorophenol	ug/L	0.088	0.22	0.02	0.95	17	0
0832	2-Chlorophenol	ug/L	1	-	1	1	1	0
0834	2-Chlorophenol	ug/L	0.091	0.23	0.02	1	17	0
0840	2-Chlorophenol	ug/L	0.093	0.23	0.02	0.95	16	0
0852	2-Chlorophenol	ug/L	0.095	0.24	0.02	0.95	15	0
0890	2-Chlorophenol	ug/L	0.094	0.24	0.02	1	16	0
4903	2-Chlorophenol	ug/L	0.33	0.54	0.02	0.95	3	0
0560	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0804	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0807	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0814	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0817	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0826	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0829	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0831	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0832	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0834	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0840	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0852	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0890	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
4903	2-Hexanone	ug/L	2.5	-	2.5	2.5	1	0
0560	2-Methylnaphthalene	ug/L	0.8	-	0.8	0.8	1	0
0804	2-Methylnaphthalene	ug/L	0.75	-	0.75	0.75	1	0
0807	2-Methylnaphthalene	ug/L	0.081	0.19	0.02	0.8	16	0
0814	2-Methylnaphthalene	ug/L	0.8	-	0.8	0.8	1	0
0817	2-Methylnaphthalene	ug/L	0.078	0.18	0.02	0.75	16	0
0826	2-Methylnaphthalene	ug/L	0.083	0.19	0.02	0.8	16	0
0829	2-Methylnaphthalene	ug/L	0.8	-	0.8	0.8	1	0
0831	2-Methylnaphthalene	ug/L	0.076	0.17	0.02	0.75	17	0
0832	2-Methylnaphthalene	ug/L	0.8	-	0.8	0.8	1	0
0834	2-Methylnaphthalene	ug/L	0.079	0.19	0.02	0.8	17	0
0840	2-Methylnaphthalene	ug/L	0.083	0.19	0.02	0.8	16	0

Table A-25. Summary Statistics for Metals and Organic Compounds Analyzed in Lake Washington Surface Water (continued)

Station	Parameter	Units	Mean	Standard Deviation	Min	Max	# of Samples	# of Detects
0852	2-Methylnaphthalene	ug/L	0.082	0.19	0.02	0.75	15	0
0890	2-Methylnaphthalene	ug/L	0.081	0.19	0.02	0.8	16	0
4903	2-Methylnaphthalene	ug/L	0.28	0.45	0.02	0.8	3	0
0560	2-Methylphenol	ug/L	0.485	-	0.485	0.485	1	0
0804	2-Methylphenol	ug/L	0.475	-	0.475	0.475	1	0
0807	2-Methylphenol	ug/L	0.12	0.11	0.06	0.5	16	0
0814	2-Methylphenol	ug/L	0.5	-	0.5	0.5	1	0
0817	2-Methylphenol	ug/L	0.12	0.10	0.06	0.475	16	0
0826	2-Methylphenol	ug/L	0.12	0.10	0.06	0.485	16	0
0829	2-Methylphenol	ug/L	0.5	-	0.5	0.5	1	0
0831	2-Methylphenol	ug/L	0.12	0.097	0.06	0.475	17	0
0832	2-Methylphenol	ug/L	0.5	-	0.5	0.5	1	0
0834	2-Methylphenol	ug/L	0.12	0.10	0.06	0.5	17	0
0840	2-Methylphenol	ug/L	0.12	0.10	0.06	0.485	16	0
0852	2-Methylphenol	ug/L	0.12	0.10	0.06	0.475	15	0
0890	2-Methylphenol	ug/L	0.12	0.11	0.06	0.5	16	0
4903	2-Methylphenol	ug/L	0.20	0.25	0.06	0.485	3	0
0560	2-Nitroaniline	ug/L	1.95	-	1.95	1.95	1	0
0804	2-Nitroaniline	ug/L	1.9	-	1.9	1.9	1	0
0807	2-Nitroaniline	ug/L	0.16	0.50	0.02	2.05	16	0
0814	2-Nitroaniline	ug/L	2	-	2	2	1	0
0817	2-Nitroaniline	ug/L	0.15	0.47	0.02	1.9	16	0
0826	2-Nitroaniline	ug/L	0.15	0.48	0.02	1.95	16	0
0829	2-Nitroaniline	ug/L	2	-	2	2	1	0
0831	2-Nitroaniline	ug/L	0.14	0.45	0.02	1.9	17	0
0832	2-Nitroaniline	ug/L	2	-	2	2	1	0
0834	2-Nitroaniline	ug/L	0.15	0.49	0.02	2.05	17	0
0840	2-Nitroaniline	ug/L	0.16	0.48	0.02	1.95	16	0
0852	2-Nitroaniline	ug/L	0.16	0.48	0.02	1.9	15	0
0890	2-Nitroaniline	ug/L	0.16	0.49	0.02	2	16	0
4903	2-Nitroaniline	ug/L	0.67	1.1	0.02	1.95	3	0
0560	2-Nitrophenol	ug/L	0.485	-	0.485	0.485	1	0
0804	2-Nitrophenol	ug/L	0.475	-	0.475	0.475	1	0
0807	2-Nitrophenol	ug/L	0.046	0.12	0.01	0.5	16	0
0814	2-Nitrophenol	ug/L	0.5	-	0.5	0.5	1	0
0817	2-Nitrophenol	ug/L	0.044	0.12	0.01	0.475	16	0
0826	2-Nitrophenol	ug/L	0.045	0.12	0.01	0.485	16	0
0829	2-Nitrophenol	ug/L	0.5	-	0.5	0.5	1	0
0831	2-Nitrophenol	ug/L	0.043	0.11	0.01	0.475	17	0
0832	2-Nitrophenol	ug/L	0.5	-	0.5	0.5	1	0
0834	2-Nitrophenol	ug/L	0.044	0.12	0.01	0.5	17	0
0840	2-Nitrophenol	ug/L	0.046	0.12	0.01	0.485	16	0
0852	2-Nitrophenol	ug/L	0.046	0.12	0.01	0.475	15	0
0890	2-Nitrophenol	ug/L	0.046	0.12	0.01	0.5	16	1
4903	2-Nitrophenol	ug/L	0.17	0.27	0.01	0.485	3	0
0560	3,3'-Dichlorobenzidine	ug/L	0.485	-	0.485	0.485	1	0
0804	3,3'-Dichlorobenzidine	ug/L	0.475	-	0.475	0.475	1	0